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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,276	08/01/2003	Stephen J. Caracci	SP03-081 (WJT003-0036)	5503
22928	7590	12/14/2004		EXAMINER
CORNING INCORPORATED				KIANNI, KAVEH C
SP-TI-3-1				
CORNING, NY 14831			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/632,276	CARACCI ET AL.	
Examiner	Art Unit	PR	
K. Cyrus Kianni	2883		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 01 August 2003.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-29 is/are pending in the application.  
4a) Of the above claim(s) 3,5 and 17-29 is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1,2,4,6,8,10-13 and 15 is/are rejected.

7)  Claim(s) 7,9,14 and 16 is/are objected to.

8)  Claim(s) 3,5 and 17-29 are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 01 August 2003 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6.

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_ .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_\_

**DETAILED ACTION**

1. Claim 1 generic to a plurality of disclosed patentably distinct species comprising:

Group I, claims 10-16, that includes claims 1-9, directed to grating-coupled waveguide wherein said diffraction grating is either fabricated directly to said substrate or said waveguide film, or even forming said waveguide film itself;

Group II, claims 17-24, that includes claims 1-9, directed to a method for integrating one or more grating based waveguide sensors including the step of directing a light beam into each grating-based waveguide sensor and for analyzing resonant condition of biological condition of substrate;

Group III, claims 23-29, that includes claims 1-9, directed to a microplate based grating-based waveguide(s) having a frame including a plurality of wells formed therein.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

Claims 1-9 included in above groups I, II and III includes subgroups as follows:

Group i, claim 2 directed to wherein said diffraction grating is formed within a top surface of said waveguide;

Group ii, claim 3, wherein said diffraction grating is formed within said waveguide film;

Group iii, claim 5, wherein said diffraction grating is formed within a top surface of said substrate;

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the

case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Mr. Beal on 10/28/04 a provisional election was made without traverse to prosecute the invention of Group I including subgroup i (claims 1-2, 4 and 6-16). Affirmation of this election must be made by applicant in replying to this Office action. Claims 3, 5 and 17-29 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Objections***

4. Claims 8 and 15 are objected to because of the following informalities: a space between '≤ and '1.4' is missing. Appropriate correction is required.

***Allowable Subject Matter***

5. Claim 7, 9, 14 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7 and 14 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said substrate is a thermoplastic material including polyvinylidene fluoride, polymethylpentene and blends polyvinylidene fluoride/polymethylmethacrylate in combination with the rest of the limitations of the base claim.

Claims 9 and 16 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said substrate is a fluoropolymer including fluoroacrylate in combination with the rest of the limitations of the base claim.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. The term "than in prior art because" in claim 10, line 15 is a relative term which renders the claim indefinite. The term "than in prior art because" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The above limitation makes the scope of the invention indefinite

and thus the claims 10-16 are rejected under 35 U.S.C. 112. To lift this rejection correction must be made. Nonetheless, the examiner would examine the respective claims as perceived by the scope of other limitations of the claim as well as the disclosed specification.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2, 4, 6, 8, 10-13 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Reichert et al. (US 58323165).

Regarding claim 1, Reichert teaches a grating-coupled waveguide (shown at least in fig. 2) comprising:  
a substrate 102;  
a diffraction grating 200 (see col. 11, 6<sup>th</sup> parag.); and  
a waveguide film 103 that has a higher index of refraction than said substrate 102 which has an index of refraction  $\leq .5$  (shown in fig. 2b, items 102, 103 and 200).

Regarding claims, 2, 4, 6 and 8, Reichert further teaches wherein said diffraction grating 200 is formed within a top surface of said waveguide film 103 (wherein either side of the waveguide 103 can be as considered top/bottom); wherein said diffraction

rating 200 also serves the function of said waveguide film 103 (shown in fig. 2b, item 200 serves also the function of the waveguide 103); wherein said substrate 102 has an index of refraction in the range of about 1.4-1.5; wherein refraction said substrate has an index of  $\leq 1.4$  (see col. 5, lines 60-61)

Regarding claim 10, Reichert teaches a grating-coupled waveguide (shown at least in fig. 2) comprising:

a substrate 102;

a diffraction grating 200;

a waveguide film 103 formed above said substrate 102, wherein said waveguide film has a higher index of refraction than said substrate which has an index of refraction  $\leq 1.5$  (shown in fig. 2b, items 102, 103 and 200);

wherein said diffraction grating 200 is either fabricated directly into said substrate or said waveguide film, or located in optical proximity to the said waveguide film, or even forming said waveguide film itself (shown in fig. 2, item 200); and

wherein said substrate 102 has a bottom surface that receives a light beam which interfaces with a waveguide (102 and 103) formed by said diffraction grating 200 and said waveguide film 103 and diffracts into a fundamental mode which has an evanescent tail that extends further into a sensing region above said waveguide film (see figures 2 and/or 3, item evanescent mono-mode coupling into a sensing region above waveguide film 103; see col. 2, 2<sup>nd</sup> parag., and/or 5<sup>th</sup>-6<sup>th</sup> parag.; also col. 13, 2<sup>nd</sup> parag., said substrate has an index of refraction  $\leq 1.5$  (shown in fig. 2b, item 102).

Regarding claims 11 and 12, Reichert further teaches wherein a surface sensitivity in the sensing region above said waveguide film is enhanced because said substrate has an index of refraction (see at least col. 3, lines 56-61 and col. 11, 4<sup>th</sup> parag.), wherein a bulk sensitivity in the sensing region above said waveguide film is enhanced because said substrate has an index of refraction  $\leq 1.5$  (see at least example 4, specifically col. 11, 3-4<sup>th</sup> parag. col. 18, 1<sup>st</sup> parag.);

Regarding claims 13 and 15, the arguments presented in rejection of claims 6 and 8, respectively, are analogous in rejection if claims 13 and 15.

- The examiner kindly advises the applicant to appropriately narrow the scope of the invention in order to make the case allowed.

#### ***Citation of Relevant Prior Art***

10. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Reichert et al. 2002/0034457 teaches at least claim 1

Sosnowski et al. 3839067 teaches at least claim 1

Tomlinson 3814498 teaches at least claim 1

Tein 3806226 teaches at least claim 1

Nishiwaki et al. 5684900 teaches at least claim 1

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

***Contact Information***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9306 (for formal communications intended for entry)

**or:**

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.



K. Cyrus Kianni  
Patent Examiner  
Group Art Unit 2883

December 7, 2004